Just the Facts About ...

Energy Efficient Landscaping

Energy Wise Homes - Winter Edition

Landscaping

There are some long term and attractive landscaping solutions which can provide effective winter climate control by deflecting cold winds and drafts, while providing indoor comfort and increasing property values.

It is important to note that for most homes, almost one third of all heat loss is due to cold winds, either through conduction, with heat simply "carried off" by marauding winds, or through infiltration, with cold drafts entering through and around cracks and improperly sealed windows and doors.

Some landscaping choices, like foundation plantings, will make a difference almost immediately, while others, like windbreaks, might take a number of years before their full value is realized. But any and all plantings will certainly boost property values and aesthetic quality.

Moreover, your planting scheme need not be massive. While establishing an effective windbreak may take a substantial number of trees, computer modeling by the U.S. Department of Energy has found that just three well placed trees, including a deciduous tree for shading the southern side of a house, can save the average household 100 250 dollars in annual heating and cooling costs. Overall, combining trees and shrubs can save from ten to 30 percent on winter fuel consumption, depending on how well insulated the home is already.

Foundation Plantings

Foundation plantings are undoubtedly the easiest and most satisfying landscaping elements in your pallette. Typically, you are looking to establish a continuous line of evergreens along the length of the foundation and around corners, approximately five feet out from the house. This living wall of vegetation will create a dead air space of slow moving or still air between the shrubs and the house, effectively establishing an insulating layer which will reduce convective heat loss and infiltration.

Never allow the plants to grow much closer to the house than five feet. The dead air space needs to be of sufficient size to work, and the extra distance will help to prevent potential problems with mildew, insect pests, and humidity, which might lead to fungal diseases.

Visually, you will want to select different types of dense evergreens for your planting scheme, with varied heights, shapes, leaf textures and colors. Planting a simple row of junipers, for example, all growing at the same height, is both boring and impractical. Shrubs with different heights provide a more effective wind barrier, while a mixture of foliar colors and forms is more appealing to the eye. Of equal significance, using the same species repeatedly increases the likelihood that a plant disease could spread from one shrub to another, even to the extent of wiping out the entire planting.

Windbreaks

Windbreaks are certainly the most effective components in cutting winter heat loss. A mature windbreak, normally comprised of several rows of tall evergreens, can reduce wind velocity by up to 50 percent, and otherwise deflect or channel wind movement away from the house.

Unfortunately, in many urban areas, there may not be sufficient space for a fully developed windbreak, although new housing developments, especially with larger lots, are prime candidates. Also, while planting a single row of evergreens can provide some appreciable windbreak benefits, the textbook windbreak requires two or three rows of trees, planted in an "L" or "U" shape on the north and northwest corners of the home. That can mean a sizeable number of trees. Further, starting with cost effective container grown stock, it can take up to ten years or more before the trees will begin to pay for themselves, save for their aesthetic and environmental benefits.

However, few of us strive for textbook perfection, anyway. Even an incomplete or immature windbreak can start to deflect some wind movement. Also, while evergreen trees provide the greatest wind reduction, you can incorporate existing deciduous trees, fences, and walls on your property into a windbreak by adding additional evergreen trees and shrubs.

For the truly ambitious, an efficient windbreak should be about as tall as the house itself, and planted at a distance of one to three times the height of the trees away from the house. Where space permits, it is recommended to start the windbreak planting 50 feet beyond each windward corner of the house. The greatest impact of the windbreak will be on an area within approximately five times the height of the trees, although wind velocities are reduced for a distance up to ten times the height of the windbreak.

Depending on the mature diameter of the selected trees, space each evergreen between six and eight feet apart. If you can plant multiple rows, for maximum impact, stagger each of the trees in alternate rows, spacing each row 12 20 feet apart.

As with the foundation plantings, select a variety of low branching evergreens for your windbreak, especially with respect to height and species, which will prevent disease outbreaks and ensure some wind penetration. Avoid growing a completely solid wall of evergreens, which can potentially create a vacuum effect on the protected side of the windbreak, thereby reducing its effectiveness.

With large scale windbreaks, it might be advisable to start with some fast growing species, such as White pine and Loblolly pine, and later interplant them with medium growth rate species, such as Eastern red cedar, American holly, and Common Juniper. Fast growing specimens will yield results more quickly, although they will also lose some of their lower branches. Your next series of plantings, whether interspersed with the first or established as a second row, will fill in any gaps.

Finally, windbreaks are investments in the future. They will eventually provide valuable screening for privacy, energy savings, and, if native species are selected, abundant benefits for wildlife. However, you should not try this approach on the southern side of your home, especially where the evergreens might block sunlight from providing passive solar heating in the winter.

Plant List

Whether developing windbreaks or foundation plantings, the following list of trees and shrubs concentrates on native species, which are far preferable to exotic species which are not necessarily well adapted to this area, and provide little or no benefit to wildlife. For example, instead of planting Leyland Cyprus, substitute Eastern red cedar, whose berries help feed birds during the winter, and whose aromatic bark is a favorite nest building material for cardinals.

Windbreak Trees	Mature Height	Foundation Shrubs	Mature Height
American Holly	30-50′	Barberry (*Arctostaphylos*)	4-20′
Common Juniper	5-30′	Common Juniper (pruned back)	3-30′
Eastern Hemlock	60-70′	Compact Oregon Grape Holly	2-3′
Eastern Red Cedar	50-75′	Cotoneaster	3-15′
Eastern Arborvitae	50-75′	Inkberry Holly	4-6′
Loblolly Pine	90′	Mountain Laurel (*Kalmia latifolia*)	7-15′
Pitch Pine	50-60′	Northern Bayberry	4-8′
Rosebay Rhododendron	20-35′	Southern Bayberry/Wax Myrtle	6-12′
Shortleaf Pine	100′	Sweetbay Magnolia (semi-evergreen)	12-20′
Virginia Pine	50-80′	Wild Hydrangea	3-9′
White Pine	75-100′		

Printed on 100% recycled paper, 50% post-consumer waste, 100% processed chlorine free.

For more information:

Department of Environmental Protection / Montgomery County, Maryland
255 Rockville Pike, Suite 120, Rockville, MD 20850
240.777.7770 fax: 240.777.7765
e-mail: help@askDEP.com

askDEP.com
We've got answers!